(Fig. 17, *I*), and are the result of infection during childhood. These are present in a very large percentage of cases, thus corroborating the cutaneous reaction made by von Pirquet, referred to early in this paper.

The differentiation of tuberculosis from other pulmonary lesions may be definitely made solely by the radiographic examination. Dry thickened pleura may be differentiated from tuberculous infiltration by the smooth, homogeneous appearance and the normal markings of the lung showing through. Pleurisy with effusion has a smooth, homogeneous appearance shading off gradually to the density of the lung at the upper surface of the fluid. Empyema, especially if encapsulation, is of equal density throughout, with clear-cut edges, and it does not have the mottled appearance of tuberculous infection. Carcinoma has an appearance similar to the fibrous consolidation, but it has more of a nodular appearance, and unless complicated by tuberculosis no individual or conglomerate tubercles are present. Aneurysm has to be differentiated only from mediastinal glandular involvement, and this is sometimes difficult unless a fluoroscopic examination is made to see whether the tumor pulsates.

Considering the large percentage of cases in which tuberculosis is found at autopsy when only a few gross sections are made of the specimen, and the fact that the Germans say that 98 per cent. of all adults have or have had a tuberculous lesion of the lung, and that 93 per cent. of children reacted to the cutaneous tuberculin test, it is not a question of who has tuberculosis, but what is the variety and extent of the lesion and is it active or inactive.

If pulmonary tuberculosis can be diagnosticated radiographically as early and accurately as now appears, and if one can state with a reasonable degree of certainty the variety of the lesion and whether it is active or inactive, and can determine with absolute certainty whether the process is advancing, held in check, or resolving, it seems that the question of the diagnosis of incipient pulmonary tuberculosis is solved.

THE MEDICAL ASPECTS OF THOSE TOXEMIAS OF PREGNANCY WHICH TEND TOWARD ECLAMPSIA.

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In the process of childbearing certain physiological activities are inaugurated which, when successfully completed, introduce into the world an independent being. Some women are never so well as during, and for a time following, pregnancy; in others, anatomical and functional aberrations arise which may be characterized as slight, moderate, or severe; in yet others, happily few, the results are abortive and destructive. With a physiology stimulated to beneficent constructive activity, on the one hand, and perverted to the most pronounced pathology, on the other, the investigator may well seek for the heretofore elusive essential causative element. The physiological features interest us as scientists; the pathological problems deeply concern us as physicians. Perhaps future discoverers, advancing beyond the realms of speculation, may demonstrate that, as the result of incomplete or inharmonious complemental union of the attracting centrosomes of the spermatozoön and ovum, some substance is developed, increased, and intensified by subsequent fœtal growth, which, entering the maternal circulation through the syncytium, is deleterious to the gravid woman, and is the primary cause of the toxemias of pregnancy. Without attempting to review the facts upon which the opinion is predicated, we may, for the present, safely assume that the primary offending material is elaborated within the fœtus and its adnexa; that it is specific in character; that it is responsible for certain maternal lesions and disorders, as hepatic, renal, and others; and that secondary toxins consequent upon such pathology play important roles in the late toxemias which lead toward eclampsia.

Shortly after impregnation, at a period probably coincident with the establishment of maternal and fœtal circulatory connection, certain special symptons arise. Of these, the peculiar vomiting of pregnancy is the most striking. Ordinarily it is of such character and degree that it gives rise to no apprehension upon the part of either patient or physician. In the comparatively rare cases, however, it attains the dignity of hyperemesis—the so-called pernicious vomiting of pregnancy—and may become an element of great danger. In such cases the symptoms are unlike those of any other morbid condition, and the anatomical changes are quite special. The distressing features of the nausea and vomiting need not be depicted; the ejected aqueous liquid, mixed with mucus and bile, is notably ammoniacal and acrid. The scanty urine is dark, and heavy with solids; the well-maintained total nitrogen output includes a notable, or even a remarkably large, proportion of ammonia; possibly acetone and diacetic acid may be present; only as the danger line is passed do albumin and casts appear. In desperate cases hemorrhages may occur, with marked pallor; the blood pressure declines, prostration is profound, and hebetude supervenes; there may be slight, but very rarely is there deep, jaundice, although there is almost always tenderness over the liver. Post mortem there is found, distinctively, necrosis of the central portions of the hepatic lobules, with consecutive cellular degenerations. The kidneys are large, soft, and pale, with slight tubular and possibly other parenchymatous alterations. The condition manifests itself during the third and fourth months, appearing only rarely at a later period of pregnancy.

It may be well at this time to consider cursorily certain subjects which are of more or less importance in the process of childbearing: Thus, there is pituitary hyperplasia during pregnancy, but it is probable that the special secretion of this gland is required in uterine development, and in its final great physiological feat. It is a matter of common observation that thyroid activity is stimulated by menstruation and pregnancy, and it has been alleged that the markedly athyroidic subject is especially liable to the late toxemia which tends toward eclampsia. In such conditions benefit may be noticeable after the adminstration of thyroid extract, but this may be due to the induced lowering of the blood tension, and not to any specific action. Removal of the parathyroids is often followed by tetany, and certain animal experiments appear to show that parathyroid feeding may prevent eclampsia, but further evidence is required before any great importance is attached to these studies. The connection between adrenal hyperplasia and the increase in blood pressure and impending and present eclampsia has not been worked out.

In the toxemic state preceding eclampsia there may be found, often if not regularly, cerebral œdema, with high tension of the cerebrospinal liquid. If convulsions have occurred, there are, usually, numerous minute extravasations of blood scattered throughout the brain, with large hemorrhages into the ventricles.

Mention has been made of the hepatic lesions found in connection with, and apparently characteristic of, the pernicious vomiting of pregnancy. In the later toxemias the liver presents anatomical changes equally distinctive. Essentially these consist of hemorrhages in and about the portal spaces, cloudy swelling, fatty degeneration, and necrosis of the hepatic cells. In some instances the microscopic findings are such as to lead to the plausible conclusion that the liver of earlier pregnancy had been carried along to the eclamptic period, with the hemorrhages as a terminal addition. Macroscopically there may be more or less extensive hemorrhages beneath the capsule and throughout the organ. During life the liver is tender and demonstrably enlarged. Slight icterus may be noticeable; profound jaundice is very rare. Acute yellow atrophy of the liver is encountered very much more frequently in pregnant women than under any other circumstance, but the large incidence is clearly due to the inviting field presented, and not to a specific cause connected with the gravid state. It has been assumed, in some quarters, that there is a special "liver of pregnancy," characterized by a definite insufficiency, manifesting itself most noticeably by the incomplete conversion of ammonia into urea, but if this is true the demonstration must be difficult.

In practically all cases of eclampsia there are renal changes which appear identical with those of acute nephritis. The kidneys are large, pale, and of diminished consistency. Microscopically the alterations are found almost exclusively in the cortical convoluted tubules, with slight glomerular involvement. Rarely are more extensive changes observed, unless the patient is also the subject of a chronic nephritis. Prompt anatomical recovery is the rule. This condition, known as the "kidney of pregnancy," often develops rapidly, and is accompanied by scanty and albuminous urine, casts, etc.; occasionally anuria supervenes.

The urinary excretion in pregnancy has been the subject of elaborate and painstaking investigation, as well merited by its importance, for it is here that the first resonant note of alarm is sounded. It is true that to the attentive observer there will be disclosed other and earlier indications of the gathering storm, yet by common consent, and with good and sufficient reasons, the appearance of albumin in this liquid has been long considered the line beyond which security does not dwell. The simple fact of its presence is sufficient evidence of the proximity of danger; the manner of its advent is dramatic. General acceptance will probably be given to the statement that, as a rule, the urine of the gravid woman is, compared with that of health, lighter in color, diminished in specific gravity, deficient in chlorides and urea, while the sulphates are increased, possibly with the appearance of indican. To this rule there are exceptions, the output of urea and salts being well maintained or exceeding the normal, but I must confess that, within the limits of my observation, these have not been as reassuring as might be inferred; indeed, to me a dark and markedly acid urine, rich in urea and other solids, is a disturbing circumstance, leading to concern or anxiety. It is probable that reduplication of my own experience is responsible for the widespread mild distrust within the medical profession as to the value of frequent and careful examinations of the urine in these cases. Nevertheless, a moment's consideration of the subject should disclose the weakness of such a position. Granting that albuminuria sometimes suddenly makes its appearance in cases showing no previous deviations from the urine of normal pregnancy, or of health, the significance of its advent is not diminished in the least; acute nephritis, the "kidney of pregnancy," and a grave toxemia are present.

Œdema has long been observed in connection with the albuminuria and eclampsia of pregnancy. Manifest œdema is obtrusively prominent, and is easily recognized; but this is preceded by an overful state of the intercellular tissue-lymph spaces, a condition which may be called occult œdema. In this variety the normal laxity of the soft tissues gives place to increased resistance; there is a notable sense of exalted tension, which is subjectively perceptible to the patient and objectively detectable by the examiner; the blood pressure is raised, sometimes to a great height; the eyes are prominent, and the face, trunk, and extremities are noticeably plump; there is no pitting upon pressure, because the resiliency of the areolar tissues is maintained; manifest œdema is imminent. In this condition there is advancing grave disturbance of the delicate balance existing between the vascular, lymphatic, and extravascular tissue-lymph circulation, and with this probably begins the danger period for the gravid woman. To the burden of the incoming fœtal toxins there is now added the accumulating toxic cellular waste of the pregnant woman herself. So far as the imminency and extent of the risks of eclampsia are concerned, there is probably little choice between occult and manifest œdema; there is a larger accumulation of deleterious matters in the latter, but the system is partly protected by the short-circuiting of the extravascular circulation.

If there is any blending of the toxemia of gravidity and uremia in the genesis of eclampsia, here is the ground upon which they must meet. There may now appear upon the scene high blood pressure, tinnitus, amblyopia, muscular twitchings, etc., followed by convulsions or coma, all of which are prominent symptoms of uremia. However, should death occur, there is this notable anatomical difference, namely, that whereas hepatic, pulmonary, and, especially, massive cerebral hemorrhages are uncommon in simple uremic convulsions, they are the rule in eclampsia. Nevertheless, after a careful review of this question, I am, tentatively at least, of the opinion that in such cases there is added to the primary toxemia of pregnancy a secondary uremia, although I am not prepared to urge strongly its acceptance upon others.

For many years I have been deeply interested in the behavior of the extravascular circulation, and the composition of the tissue lymph in cases of occult and manifest œdema. In these cases there is lymphatic insufficiency; tissue-lymph circulation is impeded or short-circuited; nutritive material fails to reach freely the various cells of the body; waste products of cellular metabolism are not adequately discharged; effete and toxic substances accumulate in this liquid. Remedially, considerable or large quantities of this tissue lymph, heavily laden with cellular debris, deleterious toxins, and saline accumulations, may be readily removed (measured and analyzed), and with evident symptomatic and fundamental benefit to the patient. I am of the opinion that the usefulness of this procedure may be enhanced by early recourse to it, at a time, indeed, which will materially anticipate eclamptic imminence.

That prominence may be lent to some of the pratical points above mentioned the pertinent details of an illustrative case are given:

A lady, of general good health, aged thirty-four years, who had had scarlet fever at thirteen years, and gave successful birth to a child, after a short period of albuminuria and threatened eclampsia, at twenty-eight years, entered upon a second pregnancy early in December. At the end of the first month she was in excellent condition; the eye grounds were normal; there were no evidences of cardiac insufficiency; the systolic blood pressure was 130 mm. Hg.; the urine was normal in quantity and character; there was moderate nausea and vomiting. The vomiting ceased in the fourth month; the blood pressure remained unaltered; the urinary findings were practically unchanged, with the exception that the sulphates gradually increased in amount, and indican appeared at the end of the third month. At the end of the sixth month a few hyaline casts were detected in the urine. One week later there was an abundant albuminuria. The blood pressure quickly rose from 135 to 160. Occult œdema was present. During the following week the average daily excretion of urine was 1600 c.c., with an intake of about 2000 c.c. of liquids. The urea output ranged between 43 and 17 grams per day. The chlorides were about normal, but the phosphates and sulphates were reduced. The albumin varied from 4 per cent. to 17 per cent. Only rarely were a few hyaline casts found. There were flashes of light before the eyes, amblyopia, headache, sleeplessness, restlessness, nystagmus, general nervous tension, muscular twitchings, etc. Fœtal movements, if present, were slight and not objectively noticeable. During the next three days the blood pressure rose to 185; the urea excretion varied from 15.4 to 18 grams daily; the chlorides rose to volumetric percentages of 37 to 45; the phosphates and, especially, the sulphates were reduced; albumin was present to from 27 per cent. to 38.5 per cent. by volume; hyaline, granular, and blood casts were abundant. During these three days there was drained away more than 6500 c.c. of intestinal serum, having a specific gravity of from 1012 to 1018, acidity of 10°, urea to 0.2 per cent., chlorides to 18 per cent., and sulphates to 10 per cent. by volume. During the following three days the urine continued scanty, with urea from 14 to 19 grams per day; the chlorides rose to the great height of 62 per cent. by volume; albumin was present to 42 per cent., 39 per cent., and 20 per cent. on the respective days; casts were found in rapidly diminishing numbers; the blood pressure declined to 142; the sleeplessness, restlessness, nervous tension, muscular twitching, and other symptoms of eclamptic imminence subsided. During the following week the urine gradually approached the normal in character, with a reduction of the albumin to traces, and the casts to occasional findings; the blood pressure fell to 132, which is about normal for this patient. At the end of this period a shrunken seven months' child was born, apparently having been dead for several days. Recovery was prompt and complete. The management included confinement to bed; bleeding to 600 c.c.; sweating; reduction of the food to liquids little more nutritious than water; the evacuation of serum, via the intestines, to the extent mentioned, by the use of elaterin, adminstered in the manner advocated in another publication.[1]

It will have been noticed that studied care has been exercised in avoiding any reference to those large and important obstetrical problems which are involved in the management of those toxemias of pregnancy which tend toward eclampsia. Upon these I have no views to express, but it should not be assumed that, in presenting some of the medical aspects of these conditions, I am insensible to the primary lesson to be learned from a proper consideration of the fact that evacuation of the uterus upon the earliest appearance of danger will promptly save almost all these women, with, probably, but little difference in the child mortality. Neither should it be inferred that, in calling attention to a method of ridding these patients of a portion of the toxic load under which they may be staggering, I am advocating it as a measure to be substituted for forcible delivery. My object will have been attained if the subject has been presented in such manner as to indicate clearly that the primary specific toxic agent is of fœtal origin, and probably attacks the pregnant woman by way of the placenta; that certain distinctive anatomical changes are induced in the liver and kidneys; that these are followed by tissue-lymph circulatory insufficiency, with consequent accumulation of toxic substances in this liquid, occult or manifest œdema, and eclamptic imminency; that by draining off a portion of the excess of tissue lymph, heavily laden with deleterious and dangerous toxic substances, cellular nutrition may be promoted, many of the prominent symptoms of eclamptic imminency relieved, and the patient benefited.

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[1] Jour. Amer. Med. Assoc., 1909, liii, 1796.

DISTURBANCES OF THE THYROID SECRETION IN NORTHERN MEXICO.

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We need a short comprehensive term for a number of interesting conditions ranging between the extremes of myxœdema and exophthalmic goitre. Levy, Rothschild, and Huchard have entitled a recent paper "Thyroid Instability."[1] This is short enough, but seems to refer more to a functional trouble, whereas the symptoms are generally caused by definite progressive changes in the gland.

There are towns in the mountainous state of Sonora where goitre is endemic, and it would seem that northern Mexico is a splendid field for the study of these disorders. A large proportion of the women have enlarged thyroids, and cases of moderate thyroidism are seen constantly.

Haller, in 1730, quoted the suggestion of Ruysch that the "blood-vessel glands" elaborate some substance that is thrown into the

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[1] Bull. de l'Académie de méd., May 18, 1909.